

VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS

Absender: MIT DER INTERNATIONALEN VORLÄUFIGEN
PRÜFUNG BEAUFTRAGTE BEHÖRDE

PCT

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Gelesen				
Eingeg.	8. JUL. 2005			
Beantwortet				
Abzulegen				

MITTEILUNG ÜBER DIE ÜBERSENDUNG
DES INTERNATIONALEN VORLÄUFIGEN
BERICHTS ZUR PATENTIERBARKEIT
(Regel 71.1 PCT)

Absendedatum
(Tag/Monat/Jahr)

26.07.2005

Aktenzeichen des Anmelders oder Anwalts
w1.2099pct

WICHTIGE MITTEILUNG

Internationales Aktenzeichen
PCT/EP2004/050378

Internationales Anmeldedatum (Tag/Monat/Jahr)
26.03.2004

Prioritätsdatum (Tag/Monat/Jahr)
28.03.2003

Anmelder

KOENIG & BAUER AKTIENGESELLSCHAFT ET AL.

1. Dem Anmelder wird mitgeteilt, daß ihm die mit der internationalen vorläufigen Prüfung beauftragte Behörde hiermit den zu der internationalen Anmeldung erstellten internationalen vorläufigen Bericht zur Patentierbarkeit, gegebenenfalls mit den dazugehörigen Anlagen, übermittelt.
2. Eine Kopie des Berichts wird - gegebenenfalls mit den dazugehörigen Anlagen - dem Internationalen Büro zur Weiterleitung an alle ausgewählten Ämter übermittelt.
3. Auf Wunsch eines ausgewählten Amtes wird das Internationale Büro eine Übersetzung des Berichts (jedoch nicht der Anlagen) ins Englische anfertigen und diesem Amt übermitteln.

4. ERINNERUNG

Zum Eintritt in die nationale Phase hat der Anmelder vor jedem ausgewählten Amt innerhalb von 30 Monaten ab dem Prioritätsdatum (oder in manchen Ämtern noch später) bestimmte Handlungen (Einreichung von Übersetzungen und Entrichtung nationaler Gebühren) vorzunehmen (Artikel 39 (1)) (siehe auch die durch das Internationale Büro im Formblatt PCT/IB/301 übermittelte Information).

Ist einem ausgewählten Amt eine Übersetzung der internationalen Anmeldung zu übermitteln, so muß diese Übersetzung auch Übersetzungen aller Anlagen zum internationalen vorläufigen Bericht zur Patentierbarkeit enthalten. Es ist Aufgabe des Anmelders, solche Übersetzungen anzufertigen und den betroffenen ausgewählten Ämtern direkt zuzuleiten.

Weitere Einzelheiten zu den maßgebenden Fristen und Erfordernissen der ausgewählten Ämter sind Band II des PCT-Leitfadens für Anmelder zu entnehmen.

Der Anmelder wird auf Artikel 33(5) hingewiesen, in welchem erklärt wird, daß die Kriterien für Neuheit, erfinderische Tätigkeit und gewerbliche Anwendbarkeit, die im Artikel 33(2) bis (4) beschrieben werden, nur für die internationale vorläufige Prüfung Bedeutung haben, und daß "jeder Vertragsstaat (...) für die Entscheidung über die Patentfähigkeit der beanspruchten Erfindung in diesem Staat zusätzliche oder abweichende Merkmale aufstellen" kann (siehe auch Artikel 27(5)). Solche zusätzlichen Merkmale können z.B. Ausnahmen von der Patentierbarkeit, Erfordernisse für die Offenbarung der Erfindung sowie Klarheit und Stützung der Ansprüche betreffen.

Name und Postanschrift der mit der internationalen Prüfung beauftragten Behörde



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VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS

PCT

INTERNATIONALER VORLÄUFIGER BERICHT ÜBER DIE PATENTIERBARKEIT

(Kapitel II des Vertrags über die internationale Zusammenarbeit auf dem Gebiet des Patentwesens)

Aktenzeichen des Anmelders oder Anwalts w1.2099pct	WEITERES VORGEHEN siehe Formblatt PCT/PEA416	
Internationales Aktenzeichen PCT/EP2004/050378	Internationales Anmeldedatum (Tag/Monat/Jahr) 26.03.2004	Prioritätsdatum (Tag/Monat/Jahr) 28.03.2003
Internationale Patentklassifikation (IPK) oder nationale Klassifikation und IPK G06T7/00, G07D7/20, G01N21/89, H04N1/60		
Anmelder KOENIG & BAUER AKTIENGESELLSCHAFT ET AL.		
<p>1. Bei diesem Bericht handelt es sich um den internationalen vorläufigen Prüfungsbericht, der von der mit der internationalen vorläufigen Prüfung beauftragten Behörde nach Artikel 35 erstellt wurde und dem Anmelder gemäß Artikel 36 übermittelt wird.</p> <p>2. Dieser BERICHT umfaßt insgesamt 5 Blätter einschließlich dieses Deckblatts.</p> <p>3. Außerdem liegen dem Bericht ANLAGEN bei; diese umfassen</p> <p>a. <input checked="" type="checkbox"/> (an den Anmelder und das Internationale Büro gesandt) insgesamt 16 Blätter; dabei handelt es sich um</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> Blätter mit der Beschreibung, Ansprüchen und/oder Zeichnungen, die geändert wurden und diesem Bericht zugrunde liegen, und/oder Blätter mit Berichtigungen, denen die Behörde zugestimmt hat (siehe Regel 70.16 und Abschnitt 607 der Verwaltungsvorschriften).</p> <p style="margin-left: 20px;"><input type="checkbox"/> Blätter, die frühere Blätter ersetzen, die aber aus den in Feld Nr. 1, Punkt 4 und im Zusatzfeld angegebenen Gründen nach Auffassung der Behörde eine Änderung enthalten, die über den Offenbarungsgehalt der internationalen Anmeldung in der ursprünglich eingereichten Fassung hinausgeht.</p> <p>b. <input type="checkbox"/> (nur an das Internationale Büro gesandt) insgesamt (bitte Art und Anzahl der/des elektronischen Datenträger(s) angeben), der/die ein Sequenzprotokoll und/oder die dazugehörigen Tabellen enthält/enthalten, nur in computerlesbarer Form, wie im Zusatzfeld betreffend das Sequenzprotokoll angegeben (siehe Abschnitt 802 der Verwaltungsvorschriften).</p>		
<p>4. Dieser Bericht enthält Angaben zu folgenden Punkten:</p> <p><input checked="" type="checkbox"/> Feld Nr. I Grundlage des Bescheids</p> <p><input type="checkbox"/> Feld Nr. II Priorität</p> <p><input type="checkbox"/> Feld Nr. III Keine Erstellung eines Gutachtens über Neuheit, erfinderische Tätigkeit und gewerbliche Anwendbarkeit</p> <p><input type="checkbox"/> Feld Nr. IV Mangelnde Einheitlichkeit der Erfindung</p> <p><input checked="" type="checkbox"/> Feld Nr. V Begründete Feststellung nach Artikel 35(2) hinsichtlich der Neuheit, der erfinderischen Tätigkeit und der gewerblichen Anwendbarkeit; Unterlagen und Erklärungen zur Stützung dieser Feststellung</p> <p><input type="checkbox"/> Feld Nr. VI Bestimmte angeführte Unterlagen</p> <p><input type="checkbox"/> Feld Nr. VII Bestimmte Mängel der internationalen Anmeldung</p> <p><input type="checkbox"/> Feld Nr. VIII Bestimmte Bemerkungen zur internationalen Anmeldung</p>		
Datum der Einreichung des Antrags 20.12.2004	Datum der Fertigstellung dieses Berichts 26.07.2005	
Name und Postanschrift der mit der internationalen Prüfung beauftragten Behörde  Europäisches Patentamt D-80298 München Tel. +49 89 2399 - 0 Tlx: 523656 epmu d Fax: +49 89 2399 - 4465	Bevollmächtigter Bediensteter Sonius, M Tel. +49 89 2399-3262 	

INTERNATIONALER VORLÄUFIGER BERICHT ÜBER DIE PATENTIERBARKEIT

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Feld Nr. I Grundlage des Berichts

1. Hinsichtlich der **Sprache** beruht der Bericht auf der internationalen Anmeldung in der Sprache, in der sie eingereicht wurde, sofern unter diesem Punkt nichts anderes angegeben ist.
 - ☐ Der Bericht beruht auf einer Übersetzung aus der Originalsprache in die folgende Sprache, bei der es sich um die Sprache der Übersetzung handelt, die für folgenden Zweck eingereicht worden ist:
 - ☐ internationale Recherche (nach Regeln 12.3 und 23.1 b))
 - ☐ Veröffentlichung der internationalen Anmeldung (nach Regel 12.4)
 - ☐ internationale vorläufige Prüfung (nach Regeln 55.2 und/oder 55.3)
2. Hinsichtlich der **Bestandteile*** der internationalen Anmeldung beruht der Bericht auf (*Ersatzblätter, die dem Anmeldeamt auf eine Aufforderung nach Artikel 14 hin vorgelegt wurden, gelten im Rahmen dieses Berichts als "ursprünglich eingereicht" und sind ihm nicht beigelegt*):

Beschreibung, Seiten

✓ 1-42 in der ursprünglich eingereichten Fassung

Ansprüche, Nr.

79-81 in der ursprünglich eingereichten Fassung

✓ 1-78 eingegangen am 17.12.2004 mit Schreiben vom 15.12.2004

Zeichnungen, Blätter

✓ 1-11 in der ursprünglich eingereichten Fassung

☐ einem Sequenzprotokoll und/oder etwaigen dazugehörigen Tabellen - siehe Zusatzfeld betreffend das Sequenzprotokoll

3. ☐ Aufgrund der Änderungen sind folgende Unterlagen fortgefallen:
 - ☐ Beschreibung: Seite
 - ☐ Ansprüche: Nr.
 - ☐ Zeichnungen: Blatt/Abb.
 - ☐ Sequenzprotokoll (*genaue Angaben*):
 - ☐ etwaige zum Sequenzprotokoll gehörende Tabellen (*genaue Angaben*):
4. ☐ Dieser Bericht ist ohne Berücksichtigung (von einigen) der diesem Bericht beigelegten und nachstehend aufgelisteten Änderungen erstellt worden, da diese aus den im Zusatzfeld angegebenen Gründen nach Auffassung der Behörde über den Offenbarungsgehalt in der ursprünglich eingereichten Fassung hinausgehen (Regel 70.2 c)).
 - ☐ Beschreibung: Seite
 - ☐ Ansprüche: Nr.
 - ☐ Zeichnungen: Blatt/Abb.
 - ☐ Sequenzprotokoll (*genaue Angaben*):
 - ☐ etwaige zum Sequenzprotokoll gehörende Tabellen (*genaue Angaben*):

* Wenn Punkt 4 zutrifft, können einige oder alle dieser Blätter mit der Bemerkung "ersetzt" versehen werden.

**INTERNATIONALER VORLÄUFIGER BERICHT
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Feld Nr. V Begründete Feststellung nach Artikel 35 (2) hinsichtlich der Neuheit, der erfinderischen Tätigkeit und der gewerblichen Anwendbarkeit; Unterlagen und Erklärungen zur Stützung dieser Feststellung

**1. Feststellung
Neuheit (N)**

Ja: Ansprüche 1-78 ✓

Nein: Ansprüche

Erfinderische Tätigkeit (IS)

Ja: Ansprüche 1-78 ✓

Nein: Ansprüche

Gewerbliche Anwendbarkeit (IA)

Ja: Ansprüche 1-78 ✓

Nein: Ansprüche:

2. Unterlagen und Erklärungen (Regel 70.7):

siehe Beiblatt

**INTERNATIONALER VORLÄUFIGER
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(BEIBLATT)**

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Es wird auf die folgenden Dokumente verwiesen:

- ✓D1: EP-A-1 059 800 (XEROX CORP) 13. Dezember 2000
- ✓D2: DE 199 40 879 A (INNOMESS ELEKTRONIK GMBH) 8. März 2001
- ✓D3: US-A-5 384 859 (BOLZA-SCHUNEMANN CLAUS A ET AL) 24. Januar 1995
- ✓D4: DE 101 32 589 A (KOENIG & BAUER AG) 23. Januar 2003
- ✓D5: JOHNSON T: "Methods for characterizing colour scanners and digital cameras"
DISPLAYS, ELSEVIER SCIENCE PUBLISHERS BV., BARKING, GB, Bd. 16,
Nr. 4, 1. Mai 1996 (1996-05-01), Seiten 183-191, XP004032520 ISSN:
0141-9382
- ✓D6: WO 98/39627 A (BARRETT-LENNARD DAVID ET AL) 11. September 1998
- ✓D7: US 6 069 973 A (LI HONG ET AL) 30. Mai 2000
- D8: PATENT ABSTRACTS OF JAPAN Bd. 1999, Nr. 05, 31. Mai 1999
- ✓D9: DE-C2_004136461
- ✓D10: DE-U1-020010920
- ✓D11: DE-U1-020303574
- ✓D12: C. Lucht, K. H. Franke: "Qualitätskontrolle von bedruckter, textiler Bahnware -
ausgewählte Lösungsverfahren zur Farbmusterinspektion": 5. Workshop
Farbbildverarbeitung, Schriftenreihe des ZBS e. V., Report Nr. 1/99, Ilmenau,
1999, 9 Seiten ISSN 1432-3346; Workshop am 07./08.10.1999
- ✓D13: K. H. Franke, H. Kempe, C. Lucht, "Automatisierung der industriellen
Warenschau bei komplexer gemusterter Bahnware - eine Herausforderung an
die Bildanalyse"; Konferenzbericht, 42nd International Scientific Colloquium, TU
Ilmenau 1997, 7 Seiten
- ✓D14: Abschlussbericht über das Gemeinschaftsforschungsprojekt "Neue
Bildverarbeitungstechnologien für die automatisierte optische Kontrolle
strukturierter Oberflächen in die Produktion", VDMA, Fachgemeinschaft Robotik
+ Automation, Fachabteilung industrielle Bildverarbeitung, Frankfurt,
22.10.1999, 125 Seiten.

1. Anspruch 1 definiert ein Verfahren zur qualitativen Beurteilung eines Materials mit
einem Erkennungsmerkmal, das folgenden Charakteristika besitzt:

- a) Erfasste und ausgewertete Farbbildsignale für die Erkennungsmerkmale werden
verglichen mit entsprechenden Sollwerten zur Ermittlung einer Farbabweichung.

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- b) Weiterhin wird das Erkennungsmerkmal auf eine Zugehörigkeit zu einer bestimmten Klasse von Erkennungsmerkmalen, oder auf eine bestimmte geometrische Kontur, oder auf eine relative Anordnung zu mindestens einem weiteren Erkennungsmerkmal des Materials geprüft.
 - c) Zumindest zwei dieser Prüfungen verlaufen unabhängig voneinander in parallel verlaufenden Signalpfaden.
 - d) Die Prüfungen erfolgen in einem laufenden Druck- oder Arbeitsprozeß einer das Material bedruckenden oder verarbeitenden Maschine, wobei das Material an einem ortsfest angebrachten Bildsensor vorbeibewegt wird.
 - e) Eine Position des im Prüfvorgang zu beurteilenden Erkennungsmerkmals variiert innerhalb eines durch Toleranzgrenzen bestimmten Erwartungsbereiches relativ zu einem auf dem Material aufgedruckten Druckbild oder relativ zu Kanten des Materials.
 - f) Eine Position des positionsvarianten Erkennungsmerkmals wird in einem der parallelen Signalpfaden bestimmt.
- 1.1 Die unterschiedliche Merkmale des Anspruchs 1 sind zwar an sich bekannt in industrieller Qualitätsprüfung, es gibt aber unter den zitierten Dokumenten keine Offenbarung und auch keinen Hinweis auf verschiedenartige und unabhängige Prüfungen von Erkennungsmerkmalen (oben erwähnte Schritten a), b) und f)) in parallel verlaufenden Signalpfaden.
- 1.2 Deshalb ist gemäß Artikel 33(2), (3) der Gegenstand des Anspruchs 1 als neu und erfinderisch zu betrachten.
2. Unabhängige Ansprüche 2-78 beschränken den Gegenstand des Anspruchs 1 weiter, und deren Gegenstand ist deshalb auch als neu und erfinderisch zu betrachten.

Translation of the pertinent portions of an International Preliminary Report Regarding Patentability, mailed 07/26/2005

1. This report is the international preliminary examination report prepared by the office charged with the international preliminary examination in accordance with Article 35 and is forwarded to Applicant in accordance with Article 36.

2. This report comprises a total of 5 pages, including this cover page.

3. Moreover, ATTACHMENTS have been included in the report, these are

a. (x) (forwarded to Applicant and the International Office) a total of 16 pages, which are

(x) pages with the specification, claims and/or drawings which have been amended and on which this report is based, and/or pages with corrections which have been agreed to by the Office (see Rule 70.16 and section 607 of the Administrative Rules)

4. This report contains information regarding the following items:

(x) Field I Basis of the Report

(x) Field V Reasoned Determination under Article

35(2)

Field I Basis of the Report

1. Regarding the **language**, the report is based on the international application in the language in which it was filed, provided nothing else is shown under this item.

2. Regarding the **components** of the international application, the report is based on

Specification, pages

1 to 42 in the originally filed version

Claims, nos.

79 to 81 in the originally filed version [sic]
1 to 78 received 12/17/2004 with letter of
12/15/2004

Drawings, pages

1 to 11 in the originally filed version

Field V Reasoned Determination under Article 35(2)

1. Determination

Novelty	Yes: Claims 1 to 78 No: Claims
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Inventive Activities	Yes: Claims 1 to 78 No: Claims
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Commercial Applicability	Yes: Claims 1 to 78 No: Claims
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2. References and Explanations

see attached sheet

Attached sheet

International Preliminary Report Regarding Patentability

Reference is made to the following documents:

[list of 14 documents]

1. Claim 1 defines a method for the qualitative evaluation of a material with an identifying characteristic, which has the following characteristics:

a) Detected and evaluated color image signals of the identifying characteristics are compared with appropriate reference variables for the detection of a color deviation.

b) The identifying characteristic is furthermore checked for an association with a defined class of identifying characteristics, or for a defined geometric contour, or a relative arrangement with at least one further identifying characteristic of the material.

c) At least two of these tests are run independently of each other in parallel extending signal paths.

d) The tests take place in a running printing or working process of a machine which imprints or processes the material, wherein the material is moved past a stationary attached image sensor.

e) A position of the identifying characteristic to be evaluated during the test procedure varies within an expected range defined by tolerance limits in relation to a print image applied to the material or in relation to the edges of the material.

f) A position of the positionally variable identification characteristic is determined in one of the parallel signal paths.

1.1 Although the different characteristics of claim 1 are known per se in industrial quality control, there is no disclosure in the cited documents and also no suggestion of different types and independent tests of identifying characteristics in parallel extending signal paths (above mentioned publications a), b) and f)).

1.2 Therefore the subject of claim 1 is considered to be novel and inventive in accordance with Article 33(2), (3).

2. Independent [sic] claims 2 to 78 further limit the subject of claim 1, and their subjects must also be considered as novel and inventive.

Claims

1. A method for the qualitative evaluation of a material (19) with at least one identifying characteristic (79), wherein a color image (79) is recorded by means of an electronic image sensor (02) of at least the identifying characteristic (79), wherein at least one first electrical signal (09) which is correlated with the color image is made directly or indirectly available by the image sensor (02), wherein an evaluating device (03), which is connected with the image sensor (02), evaluates the first electrical signal (09), wherein a second electrical signal is obtained from at least one reference image and is stored in a data memory (14), wherein the second electrical signal has a reference variable (16, 17, 18) of at least two different properties of the reference image for the first electrical signal (09), wherein the first signal (09) is compared with at least two of the reference variables (16, 17, 18) contained in the second electrical signal, wherein during the comparison at least the color image of the identifying characteristic (79) is checked for a deviation from the reference image, and the identifying characteristic (79) is checked regarding its association with a defined class of identifying characteristics (79), or a defined geometric contour or a relative arrangement in respect to at least one further identifying characteristic (79) of the material (19), characterized in that at least two of the checks are performed independently of each other in parallel extending signal paths, wherein the checks are performed during a running printing process of a printing press which imprints

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the material (19), or in a running work process of a machine processing the material (19), wherein the material (19) is moved past the observation area (21) of the image sensor (02) which is fixed in place, wherein, because of previous production processes, a position of the identifying characteristic (79) to be evaluated during the checking process varies within an expected range (78), defined by tolerance limits, in relation to a print image imprinted on the material (19) or relative to the edges of the material

(19), wherein the position of the positionally varied identifying characteristic (79) is determined in one of the parallel signal paths.

2. The method in accordance with claim 1, characterized in that checks performed independently of each other take place at approximately the same time.

3. The method in accordance with claim 1, characterized in that checks performed independently of each other take place in the same evaluating device (03).

4. The method in accordance with claim 1, characterized in that the test results obtained in the individual signal paths are stored in the evaluating device (03).

5. The method in accordance with claim 1, characterized in that the checks of the color image take place on the basis of the reference image stored in the data memory (14), which is part of the evaluating device (03), in the course of a learning mode (48) of the evaluating device (03), by means of the evaluating device (03) after it has changed from its learning mode (48) into a working mode (49).

6. The method in accordance with claim 1, characterized in that a single reference image or several reference images are recorded during the learning mode (48).

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7. The method in accordance with claim 1, characterized in that the evaluation of the material (19) is performed for the control of its quality.

8. The method in accordance with claim 1, characterized in that the material (19) is a bill (19) or a stamp (19).

9. The method in accordance with claim 1, characterized in that the material (19) is designed as a printed sheet (19) and is moved past the image sensor (02) at a speed of up to 18,000 printed sheets per hour.

10. The method in accordance with claim 1, characterized in that the material (19) is embodied as a web (19) of material and is moved past the image sensor (02) at a speed of up to 15 m/s.

11. The method in accordance with claim 1, characterized in that the image sensor (02) has several light-sensitive pixels.

12. The method in accordance with claim 11, characterized in that a first electrical signal (09) is made available for every pixel.

13. The method in accordance with claim 1, characterized in that the first electrical signal (09) has been divided onto several signal channels (R, G, B).

14. The method in accordance with claim 13, characterized in that the first electrical signal (09) is an RGB signal, so that every signal channel (R, G, B) makes available a portion of the first signal (09) corresponding to one of the three basic colors red, green and blue.

15. The method in accordance with claim 13,

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characterized in that the spectral sensitivity in each signal channel (R, G, B) is set to a defined spectral sensitivity of the human eye.

16. The method in accordance with claim 1, characterized in that in regard to hue, fullness and brightness the first signal (09) is matched to the color perception of the human eye.

17. The method in accordance with claim 16, characterized in that the check of the color image for a deviation of the color image from the reference image takes place in that the portion of the first signal (09) which is a part of the color image made available in the first signal channel (R) is linked by means of a first calculation prescription (36) with the portion made available in the second signal channel (G), by means of which an output signal (43) of a first compensation color channel (38) is generated, that the portion of the first signal (09) which is a part of the color image made available in the third channel (B) is linked by means of a second calculation prescription (37) with the portion in the first and second signal channels (R, G), by means of which an output signal (44) of a second compensation color channel (39) is generated, and that the output signals (43, 44) of the compensation color channels (38, 39) are classified by means of a comparison with reference variables.

18. The method in accordance with claim 17, characterized in that the output signal (43, 44) of each compensation color signal (38, 39) is stored in the data memory (14).

19. The method in accordance with claim 17, characterized in that the first calculation prescription (36) provides a weighted difference formation of the portion of the first electrical signal (09) made available in the second signal channel (G) from the corresponding portion in the

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first signal channel (R), and/or the second calculation prescription (37) provides a weighted difference formation of the weighted sum of the portions in the first and second signal channel (R, G) from the corresponding portion in the third signal channel (B).

20. The method in accordance with claim 17, characterized in that at least one of the portions of the first electrical signal (09) made available in the signal

channels (R, G, B) is subjected to a transformation (41) by means of a calculation prescription (36, 37) prior to and/or following their linkage.

21. The method in accordance with claim 20, characterized in that a non-linear transformation is used.

22. The method in accordance with claim 17, characterized in that each one of the portions of the first electrical signal (09) which is taken into consideration during a linkage is weighted with a coefficient (42) prior to and/or after the transformation (41).

23. The method in accordance with claim 17, characterized in that the output signal (43, 44) of at least one compensation color channel (38, 39) is filtered by means of a low pass filter (47).

24. The method in accordance with claim 23, characterized in that the low pass filter (47) is designed as a Gauss low pass filter.

25. The method in accordance with claim 17, characterized in that in the learning mode (48) the output signals (43, 44) of the two compensation color channels (38, 39) produced by at least one reference image are stored as reference variables in the data memory (14), and wherein in the working mode (49) the output signals (43, 44) from the two compensation color channels (38, 39) generated by the

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identifying characteristic (79) to be checked are compared with the reference variables stored in the data memory (14).

26. The method in accordance with claim 17, characterized in that the comparison of the output signals (43, 44) of the two compensation color channels (38, 39) generated by the identifying characteristic (79) to be checked with the reference variables stored in the data memory (14) takes place for each pixel of the image sensor (02).

27. The method in accordance with claim 26, characterized in that the reference variables stored for each pixel in the data memory (14) are generated by storing the output signals (43, 44) from several reference images, by means of which a tolerance window is defined for the reference variables.

28. The method in accordance with claim 17, characterized in that the classification (54) of the output signals (43, 44) of the compensation color channels (38, 39) is performed by means of a classification system.

29. The method in accordance with claim 28, characterized in that linear and/or non-linear classification systems, threshold value classification devices, Euclidian distance classification devices, Bayes classification devices, fuzzy classification devices or artificial neuronal networks are employed.

30. The method in accordance with claim 1, characterized in that the check of the identifying characteristic (79) regarding its association with a defined class of identifying characteristics (79) takes place in that the first electrical signal (09) made available by the image sensor (02) is converted by means of at least one calculation prescription to a translation-invariable signal with at least one characteristics value (62), that the characteristics value (62) is weighted with at least one fuzzy association function (67) in that, by means of the association function

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(67), the association of each characteristic value (62) to a characteristic (64) which is characteristic of the image content of the color image to be tested, that a higher order fuzzy association function (71) is generated by the linkage of all association functions (67) by means of a calculation prescription consisting of at least one rule, that a sympathetic value (73) is determined from the higher order fuzzy association function (71), that the sympathetic value (73) is compared with a threshold value (76), and that as a

function of the result of this comparison a decision is made regarding an association of the identifying characteristic (79) with a defined class of identifying characteristics (79).

31. The method in accordance with claim 30, characterized in that a grid of several image windows (56) is placed over the color image, wherein each image window (56) consists of several pixels.

32. The method in accordance with claim 31, characterized in that the color image is divided into $M \times N$ image windows (56), each with $m \times n$ pixels, wherein M , N , m , $n = 1$.

33. The method in accordance with claim 30, characterized in that the association function (57) has a functional connection with the value range of the characteristics value (62).

34. The method in accordance with claim 33, characterized in that the association function (57) has at least one parameter, and this parameter is determined.

35. The method in accordance with claim 30, characterized in that the calculation prescription for converting the first electrical signal (09) from the image sensor (02) into a translation-invariable characteristics value (62) is a two-dimensional mathematical spectral

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transformation method (58).

36. The method in accordance with claim 35, characterized in that the calculation prescription is a two-dimensional Fourier or Walsh or Hadamard or circular transformation.

37. The method in accordance with claim 35, characterized in that the characteristics value (62) is represented by the amount of a spectral coefficient (59).

38. The method in accordance with claim 31, characterized in that two-dimensional spectra from the first electrical signal (09) made available by the image sensor (02) for each pixel are determined for each image window (56).

39. The method in accordance with claim 38, characterized in that spectral amplitude values (62) are calculated from the two-dimensional spectra and are linked to form a single sympathetic value (73) per image window (56).

40. The method in accordance with claim 30, characterized in that the association functions (67) are unimodal functions.

41. The method in accordance with claim 30, characterized in that the higher order association function (71) is a multi-modal function.

42. The method in accordance with claim 30, characterized in that the association functions (67) and/or the higher order association function (71) is (are) a potential function(s).

43. The method in accordance with claim 30, characterized in that in the learning mode (48) at least one parameter is conformed or at least one threshold value (76) is determined, and wherein in the working mode (49) the first electrical signal (49) made available by the image sensor (02) is evaluated on the basis of the results from the learning mode (48).

44. The method in accordance with claim 30, characterized in that the calculation prescription by means of which the association functions (67) are compared with

each other is a conjunctive association function (69) within the meaning of IF...THEN linkage.

45. The method in accordance with claim 30, characterized in that the generation of the higher order fuzzy association function (71) takes place by processing the partial steps of premise evaluation, activation and aggregation, wherein in the course of the premise evaluation a sympathetic value (73) is determined for each IF portion of a calculation prescription, and wherein in the course of the activation an association function (67) is determined for each IF...THEN calculation prescription, and wherein in the course of aggregation the higher order association function (71) is generated by overlapping all association functions (67) created during activation.

46. The method in accordance with claim 30, characterized in that the sympathetic value (73) is determined in accordance with a focus and/or maximum method.

47. The method in accordance with claim 1, characterized in that the check of the identifying characteristics (79) for a defined geometric contour or for a relative arrangement in respect to at least one further identifying characteristic (79) of the material (19) takes place in that at least one background reference variable and at least one mask reference variable are stored in the data memory (14), wherein the background reference variable represents at least one property of the material (19) to be

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evaluated in at least one portion of an expected range (78) surrounding the identifying characteristic (79), and wherein the mask reference variable represents the geometric contour of the identifying characteristic (79) or the relative arrangement in respect to each other of several identifying characteristics (79), that in the course of checking the material (19) a differential value is formed at least for the expected range (78) from the electrical signal (09) made available by the image sensor (02) and the background reference variable, that the actual position of the

identifying characteristic (79) is derived from a comparison of the differential value with the mask reference variable, and that the area of the material (19) to be evaluated, which results from the actual position of the identifying characteristic (79), is blanked out for the qualitative evaluation of the material (19).

48. The method in accordance with claim 47, characterized in that the background reference variable represents the gray value of the expected range (78) surrounding the identifying characteristic (79).

49. The method in accordance with claim 47, characterized in that a binary formation threshold is stored in the data memory (14), wherein all first electrical signals (09) made available by the image sensor (02), whose value falls below the binary formation threshold, are filtered out of the differential value.

50. The method in accordance with claim 47, characterized in that in the course of the determination of the position of the identifying characteristic (79) the mask reference variable is conformed until a maximum agreement between the mask reference variable and the differential value results.

51. The method in accordance with claim 47, characterized in that in the course of the determination of the position of the identifying characteristic (79) a

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comparison of the foci of the mask reference variables with the foci of the differential value takes place.

52. The method in accordance with claim 51, characterized in that those position values are assumed to be the actual position of the identifying characteristic (79), wherein a minimal deviation results during the comparison of the foci of the mask reference variables with the foci of the differential value.

53. The method in accordance with claim 47, characterized in that the identifying characteristic (79) is embodied in the form of strips or has strip-shaped sections.

54. The method in accordance with claim 47, characterized in that the identifying characteristic (79) is designed as a security characteristic of a bill (19) or a stamp (19).

55. The method in accordance with claim 47, characterized in that the identifying characteristic (79) is designed as a window thread (79), a window thread perforation (79, 91), a hologram or a kinegram.

56. The method in accordance with claim 47, characterized in that, for determining the background reference variable, material (19) without an identifying characteristic (79) is used in the learning mode (48), wherein the background reference variable is derived from at least one property of the material (79) to be evaluated in the expected range (78).

57. The method in accordance with claim 47, characterized in that, for determining the background reference variable, material (19) with an identifying characteristic (79) is used in the learning mode (48), wherein in case of an identifying characteristic (79) which appears bright in comparison with the expected range (78),

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the background reference variable is derived as a threshold value from the values of the darkest image points of the identifying characteristic (79), and wherein in case of an identifying characteristic (79) which appears dark in comparison with the expected range (78), the background reference variable is derived as a threshold value from the values of the brightest image points of the identifying characteristic (79).

58. The method in accordance with claim 47, characterized in that different background reference variables are determined for different areas of the material (19).

59. The method in accordance with claim 47, characterized in that the mask reference variable and the differential value are each projected onto at least one projection line (96, 97), wherein the actual position of the identifying characteristic (79) in the longitudinal direction of the projection lines (96, 97) is derived from a comparison of the projection data of the mask reference values and the differential value.

60. The method in accordance with claim 47, characterized in that the check of the identifying characteristic (79) takes place by means of suitable mathematical operations of digitized input data.

61. The method in accordance with claim 13, characterized in that the first electrical signal (09) is a signal vector (22), whose coefficients (R, G, B) represent the portions of the first electrical signal (09) made available by the image sensor (02) in different signal channels (R, G, B), that the coefficients (R, G, B) are multiplied by a correction matrix (28), that the corrected signal vector (29) obtained in the course of this is supplied to a color monitor (04), and the color image is represented at the color monitor (04) on the basis of the corrected

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signal vector (29) for the qualitative evaluation of the latter.

62. The method in accordance with claim 61, characterized in that in each of its columns and lines the correction matrix (28) has as many coefficients (i) as the signal vector (22).

63. The method in accordance with claim 61, characterized in that the coefficients (K_4 to K_{12}) of the correction matrix (28) are determined in an iterative approximation algorithm, in which a reference color chart has been preset, in which different reference colors are

represented in several color fields, wherein for each color field of the reference color chart a vector with reference values has been preset, wherein a color image from the reference color chart is recorded by the image sensor (02), wherein a signal vector (22) is determined for each color field wherein, in a first iteration step, the signal vectors (22) for all color fields are multiplied by the correction matrix (28), and wherein the coefficients (K_4 to K_{12}) of the correction matrix (28) are changed in each subsequent iteration step in such a way that the corrected signal vectors (29) are iteratively brought close to the vectors with the preset reference variables.

64. The method in accordance with claim 63, characterized in that the approach of the corrected signal vectors (29) to the vectors with the preset reference variables are evaluated for each iteration step in that the differential value between the corrected signal vector (29) and the vector with the preset reference variables is determined for each color field of the reference color chart and the sum of all differential values is added up, wherein the change of the coefficients (K_4 to K_{12}) of the correction matrix (28) in the actual iteration step is assumed for the subsequent iteration step only if the sum of all differential values in the actual iteration step has become smaller in comparison with the sum of all differential values in the previous iteration step.

65. The method in accordance with claim 61,

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characterized in that, for matching the color balance, the brightness and the contrast, in a further correction step the signal vectors (22) are changed, in addition to the correction with the correction matrix (28), in such a way that the coefficients (R, G, B) of each signal vector (22) are multiplied by signal channel-dependent correction factors (K_1 , K_2 , K_3) and a correction vector (24) is added to each signal vector (22).

66. The method in accordance with claim 65, characterized in that the coefficients (a_1 , a_2 , a_3) of the correction vector (24) and the signal channel-dependent correction factors (K_1 , K_2 , K_3) are determined in that a reference color chart is preset in which different reference colors are represented in several color fields, wherein a vector with reference variables has been preset for each color field of the reference color chart, wherein a color image from the reference color chart is recorded by the image sensor (02), wherein a signal vector (22) is determined for each color field, wherein the correction vector (24) and the correction factors (K_1 , K_2 , K_3) are selected in such a way, that the corrected signal vectors (26) for the two color fields with the reference gray values black and white, which are obtained by appropriate addition with the correction vector (24) and by means of a multiplication with the signal channel-dependent correction factors (K_1 , K_2 , K_3), agree with the preset reference variables for these two color fields.

67. The method in accordance with claim 65 or 66, characterized in that the correction step for matching the color balance, the brightness and the contrast is performed prior to the multiplication with the correction matrix (28).

68. The method in accordance with claim 61, characterized in that the image sensor (02) has a plurality of pixels arranged flat or in a linear shape, wherein each pixel provides at least one signal vector (22).

69. The method in accordance with claim 68, characterized in that in addition to the correction with the correction matrix (28), the signal vector (22) is changed in a further correction step for conforming the intensity values in such a way, that the coefficients (R, G, B) of the corrected signal vectors (26, 29) or uncorrected signal vectors (22) determined for each pixel are each multiplied with signal channel-dependent correction factors (K_{13} , K_{14} , K_{15} , K_{16} , K_{17} , K_{18}), which have been specifically preset for each pixel.

70. The method in accordance with claim 69, characterized in that the pixel-specific signal channel-dependent correction factors (K_{13} , K_{14} , K_{15} , K_{16} , K_{17} , K_{18}) are determined in that the observation area (21) of the image sensor (02) has been lined with a homogeneous colored material, in particular a homogeneous white material, that a color image is recorded by means of the image sensor (02) and that in this way a signal vector (22) is determined for each pixel, that the particular signal vector (22) is defined, which represents the brightest location in the observation area (21), and that the pixel-specific signal channel-dependent correction factors (K_{13} , K_{14} , K_{15} , K_{16} , K_{17} , K_{18}) are determined for each pixel in such a way that the result of the multiplication of these correction factors (K_{13} , K_{14} , K_{15} , K_{16} , K_{17} , K_{18}) with the coefficients (R, G, B) of the respective corresponding signal vectors (22) agrees with the coefficients (R, G, B) of the signal vector (22) at the brightest location in the observation area.

71. The method in accordance with claim 70, characterized in that during the determination of the pixel-specific signal channel-dependent correction factors (K_{13} , K_{14} , K_{15} , K_{16} , K_{17} , K_{18}) the illumination in the observation area (21) corresponds to the illumination of the image sensor (02) during the qualitative evaluation of the material (19).

72. The method in accordance with claim 69, characterized in that the correction step for matching the intensity values is performed after the multiplication with

74. The method in accordance with claim 73, characterized in that the factor (γ) is selected to have a value between 0.3 and 0.5.

75. The method in accordance with claim 73, characterized in that the factor (γ) is selected to be approximately 0.45.

76. The method in accordance with claim 61, characterized in that, in addition to the correction by means of the correction matrix (28), for matching the illumination conditions the signal vectors (22) are changed in a further correction step in such a way that the coefficients of the corrected signal vectors correspond to the result which is obtained when the observation area is illuminated with normal light.

77. The method in accordance with claim 61, characterized in that the reference color chart is designed in the manner of an IT8 chart with a total of 288 color fields.

78. The method in accordance with claim 61, characterized in that the vectors with the reference variables are specified for the signal channels by conversion of the CIELAB color values, which are known for the color fields of the reference color chart, into appropriate coefficients for the signal channels.

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the correction matrix (28).

73. The method in accordance with claim 62, characterized in that, prior to being transmitted to the color monitor (04), the coefficients (R, G, B) used as the basis for the corrected signal vectors (32) are each raised to a higher power by a factor (γ).